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10/665,590	09/18/2003	Takao Yamanouchi	KOY-S	6837
20311 7590 05/20/2005 MUSERLIAN, LUCAS AND MERCANTI, LLP 475 PARK AVENUE SOUTH 15TH FLOOR NEW YORK, NY 10016			EXAMINER DOTE, JANIS L	
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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/665,590

Applicant(s)

YAMANOUCHI ET AL.

Examiner

Janis L. Dote

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 February 2005.
2a) ☒ This action is FINAL. 2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
4a) Of the above claim(s) 7-20 is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-5, 21-23, 25 and 28-31 is/are rejected.
7) ☒ Claim(s) 6, 24, 26, 27 and 32-34 is/are objected to.
8) ☒ Claim(s) 1-34 are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 18 September 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

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1. The examiner acknowledges the amendment to claim 1 and the addition of claims 21-34 set forth in the amendment filed on Feb. 22, 2005. Claims 1-34 are pending.

2. Applicants' election with traverse of the invention of Group I, which includes instant claims 1-6 and newly added claims 21-34, in the reply filed on Feb. 22, 2005, is acknowledged. The traversal is on the ground(s) that because the method claims of Group II are directed to the use of the toner in Group I, they should be subject to rejoinder after the claims of Group I are allowed. This is not found persuasive. As set forth in the restriction requirement, the examiner has provided reasons as to why the toners of Group I are patentably distinct from the methods of using in Group II. Applicants have not specifically indicated the errors in the restriction or specifically articulated why the reasons for restriction are inadequate. In addition, applicants have not provided any reasons why the toners in Group I and the methods of using in Group II are not patentably distinct, or stated on the record that the inventions of the two groups are obvious variations of each other.

The requirement is still deemed proper and is therefore made FINAL.

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3. Claims 7-20 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicants timely traversed the restriction (election) requirement in the reply filed on Feb. 22, 2005.

4. The objection to the drawings set forth in the office action mailed on Nov. 22, 2005, paragraph 5, has been withdrawn in response to the amended paragraph filed on Feb. 22, 2005, beginning at page 79, line 5, of the specification.

5. The disclosure is objected to because of the following informalities:

The use of trademarks, e.g., Coulter Counter [sic: COULTER COUNTER} at page 39, line 2, has been noted in this application. The trademarks should be capitalized wherever they appear and be accompanied by the generic terminology. This example is not exhaustive. Applicants should review the entire specification for compliance.

Although the use of trademarks is permissible in patent applications, the proprietary nature of the marks should be respected and every effort made to prevent their use in any

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manner which might adversely affect their validity as trademarks.

Appropriate correction is required.

Applicant's arguments filed on Feb. 22, 2005, have been fully considered but they are not persuasive.

Applicants assert that the amendment to the specification filed on Feb. 22, 2005, overcomes the objection. However, as noted in the objection above, the amendment to the specification filed on Feb. 22, 2005, did not capitalize all the trademarks disclosed in the instant specification. Accordingly, the objection stands.

6. The instant specification has defined following terms recited in the instant claims:

(1) The term "shape factor" is defined at page 20, lines 1-10, as "a value for expressing a degree of roundness of the toner particle, and is given by the equation below:

Shape factor = $((\text{maximum diameter}/2)^2 \times \pi) / (\text{projected area})$." The parameters "maximum diameter" and "projected area" are defined at page 20, lines 5-10.

(2) The "arithmetic mean value of shape factor" is determined by the method disclosed at page 20, lines 11-18.

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(3) The term "coefficient of variation of shape factor" is defined at page 20, line 19, to page 21, line 3, by the equation

Coefficient of variation of shape factor = $(S_1/K) \times 100(\%)$,
where S_1 represents standard deviation of shape factors of 100 toner particles, and K represents an average value of the shape factors.

(4) The term "rounded toner particle" is defined at page 22, lines 6-9, as "a toner particle substantially having no projected portions, and more specifically to a toner particle" as described at page 22, lines 9-24, and in Fig. 2A. The ratio of rounded toner particles to 1000 toner particles is determined by the method disclosed at page 23, lines 5-10.

(5) The term "coefficient of variation of number particle distribution" is defined at page 24, lines 8-11, by the equation

Coefficient of variation by number = $[S_1/D_n] \times 100$,

where S_1 represents the standard deviation in the number particle diameter distribution, and D_n represents the number average particle diameter (μm). The parameters of the equation are determined by the method disclosed at page 23, line 13, to page 24, line 4.

(6) The term "conveyance index" is defined at page 15, lines 4-8, as an "index of conveyance property of the toner particle typically obtained by measurement using the parts

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feeder shown in Fig. 1 under constant vibration, and expresses how readily the toner can be conveyed, or in other words, mobility of the toner." The conveyance index is calculated by the equation disclosed at page 16, line 23, to page 24, line 4,

$$\text{"Conveyance index} = (750-300)\text{mg}/(T750-T300)\text{sec},$$

where T300 is a time required for transferring 300 mg of the toner to the pan 7 [of the feeder in Fig. 1], and T750 is a time required for transferring 750 mg of the toner to the pan 7."

(7) The term "salting-out/fusion-adherence process" is defined at page 58, lines 19-23, as "salting-out (coagulation of particles) and fusion (disappearance of particle boundary) process at the same time, or means any action causing salting-out and fusion-adherence at the same time."

7. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

8. Claim 28 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and

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distinctly claim the subject matter which applicant regards as the invention.

Claim 28 is indefinite in the phrase "at least one releasing agent of polyolefinic waxes . . . and ester wax" because it is not clear whether the claim requires that toner require all four releasing agents or just one releasing agent.

9. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

10. In the interest of compact prosecution, the examiner has interpreted the claim language in claim 28 as requiring one of the releasing compounds recited in instant claim 28.

Rejections based on this interpretation are set forth infra.

11. Claims 1-5, 21-23, 25, and 28-31 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over US 2002/0037469 A1 (Kohyama), as evidenced by Grant & Hackh's Chemical Dictionary, 5th edition, page 357.

Kohyama discloses a non-magnetic black toner 10Bk, which comprises toner particles comprising a binder resin, carbon

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black, and a releasing agent. The releasing agent is the ester wax of compound (18), which meets the releasing agent limitation recited in instant claim 28. Page 9, compound (18), and paragraph 0353, and Table 2 at page 21, colored particles 10Bk. The toner further comprises 1.0 wt% externally added hydrophobic silica having a number average primary particle size of 10 nm, and 1.2 wt% externally added "hydrophobic titanium [sic: oxide]" having a number average primary particle size of 25 nm, based on the weight of the toner particles. See Toner 10Bk at paragraph 0376, and paragraph 0413. The number average primary particle sizes of the externally added hydrophobic silica and hydrophobic titanium meet the number average primary particle diameters recited in instant claims 3-5, 25, 30, and 31. The weight ratio of the hydrophobic silica to the hydrophobic titanium oxide is 1.0/1.2, i.e., 0.83 mass parts per one mass part, which is within the range of 0.3 to 1.5 mass parts per one mass part recited in instant claim 23. The toner particles are obtained by a "salting-out/fusion-adherence process of a resin particle and a colorant particle proceeded in a water-based medium" as recited in the product-by process limitation recited in instant claims 6 and 34. See paragraphs 0374-0376, and Table 2, toner 10Bk. The resin particles comprise the resin particles HP-1, MP-5, and LP-1, which have peaks in the

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molecular weight distribution ranges of 518,000, 102,000, and 18,000, respectively. Paragraphs 0335, 0354, and 0373. The molecular weight peaks are within the ranges of 100,000 to 1,000,000 and of 1,000 to 50,000, recited in instant claim 2. Accordingly, the toner 10Bk has peaks in molecular weight distributions that meet the ranges recited in instant claim 2.

Kohyama further teaches that in the process of making the toner particles, the growth of the toner particles was stopped when the toner particles reached the volume average particle size of 6.5 μm . Paragraph 0375, lines 19-24. Thus, it is reasonable to conclude that the volume average particle size of the toner 10Bk is about 6.5 μm , which is within the range of 3 to 9 μm recited in instant claims 1 and 29. The burden is on applicants to prove otherwise. In re Fitzgerald, 205 USPQ 594 (CCPA 1980).

The toner particles of toner 10Bk have an average "shape coefficient" of 1.43, a "coefficient of number particle diameter distribution" of 22%, a "coefficient of variation of shape coefficient" of 13%, and a ratio of "particles having no corner" of 87% by number. Toner 10Bk at paragraph 0376, and Table 7 at page 25, Toner 10Bk. The values of the "coefficient of number particle diameter distribution" and "coefficient of variation of shape coefficient" are within the ranges of "16% or less" and

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"26% or less," respectively recited in instant claims 1 and 29.

The "shape coefficient," the "coefficient of number particle diameter distribution," and "coefficient of variation of shape factor" have the same definitions as the "shape factor" and the coefficients recited in the instant claims, and are determined by the same methods as disclosed in the instant specification. Compare paragraph 6, supra, and Kohyama, paragraphs 0089-0091, 0096-0097, and 0103-0105. The number value of the ratio of "particles having no corner" is within the "ratio of rounded toner particle" range of "50% by number or more." The Kohyama ratio of "particles having no corner" appears to have the same definition as the "ratio of rounded toner particle" as recited in instant claim 1. Compare paragraph 6, supra, and Kohyama, paragraphs 0111-0112, and Fig. 1(a). Thus, the Kohyama ratio of "particles having no corner" appears to be the same as the "ratio of rounded toner particles."

Kohyama does not identify its average "shape coefficient" of 1.43 as an arithmetic mean as recited in instant claim 1. However, as discussed supra, the Kohyama shape coefficient has the same definition as the "shape factor" recited in instant claims 1 and 29. The average shape factor in Kohyama is determined by taking a photograph of toner particles magnified by a factor of 2000 under a scanning electron microscope and

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analyzing the obtained photograph using a "Scanning Image Analyzer." The shape coefficients of 100 toner particles were calculated according to the formula disclosed in paragraphs 0089-0090 of Kohyama. Kohyama, paragraph 0091. The instant specification at page 20, lines 11-18, discloses that the "arithmetic mean value of the shape factors was measured by taking a photograph of the toner particles at a 2,000 x magnification under a scanning electron microscope, and by analyzing the obtained photograph using the 'SCANNING IMAGE ANALYZER' . . . The shape factors of 100 toner particles are obtained herein by calculation using the equation above [at page 20, lines 4-10], and the arithmetic mean value thereof is obtained." The term "arithmetic mean" is defined as the "average, mean. The quotient obtained by dividing the sum of n numbers by n ; hence, $(a + b + c + d)/4 =$ arithmetic mean of a , b , c , and d ." See Grant & Hackh's Chemical Dictionary, 5th edition, p. 357. Because the Kohyama "shape coefficient" has the same definition and is determined in the same manner as the "shape factor" recited in the instant claims, the term "arithmetic mean" is defined as an "average," and the Kohyama average "shape coefficient" of 1.48 is within the numerical range of 1.1 to 1.5 recited in instant claims 1 and 29, it is reasonable to conclude that the Kohyama average "shape

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coefficient" of 1.43 meets the "arithmetic mean value of shape factor" recited in instant claims 1 and 29. The burden is on applicants to prove otherwise. Fitzgerald, supra.

Kohyama does not disclose that the toner 10Bk has a "conveyance index of 2.0 to 10.0" recited in instant claims 10 and 29, or of 2.0 to 9.0 or 2.0 to 8.0 recited in instant claims 21 and 22, respectively. However, as discussed supra, Kohyama meets the compositional limitations recited in instant claims 2-5, 23, 25, 28, 30 and 31, and meets the "coefficient of variation of shape factor," the "ratio of rounded toner particle," and "coefficient of variation of number particle diameter distribution," the volume average particle size, and the "arithmetic mean value of shape factor" recited in instant claims 1 and 29. The instant specification at page 19, lines 4-9, discloses that when the "toner of the present invention has an arithmetic mean value of shape factor of 1.1 to 1.5, a coefficient of variation of shape factor of 16% or less, a ratio of rounded toner of 50 percent by number or more [,][T]his facilitates the conveyance index of the toner to be regulated within the specific range." The instant specification at page 19, lines 15-20, discloses that "[a]djustment of a coefficient of variation of number particle diameter distribution of the toner of 26% or less is successful in

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sharpening the particle diameter distribution of the toner, is consequently successful in controlling the conveyance index of the toner within a specific range." Thus, because the Kohyama toner 10Bk meets the compositional limitations recited in instant claims 2-5, 23, 25, 28, 30 and 31, and has a "coefficient of variation of shape factor," a "ratio of rounded toner particle," a "coefficient of variation of number particle diameter distribution," a volume average particle size, and an "arithmetic mean value of shape factor," as recited in instant claims 1 and 29, it is reasonable to presume that the Kohyama toner 10Bk has a conveyance index that is with the range recited in instant claims 1, 21, 22, and 29. The burden is on applicants to prove otherwise. Fitzgerald, supra.

Applicants' arguments filed on Feb. 22, 2005, have been fully considered but they are not persuasive.

Applicants assert that the conveyance index of the toner varies by adding the external additives according to a specific mixing technique, as discussed at page 25, lines 1-12, and shown in Table 3 of the specification. Applicants assert that Table 3 demonstrates that the examiner's presumption of the conveyance index being directly related on the compositional limitation of the toner is incorrect. Applicants further assert that because "the conveyance index cannot be 'necessarily present' in Kohyama

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due to the fact that Kohyama is silent with respect to mixing methods of additives," Kohyama does "not inherently teach adjusting the conveyance index within the range of claim 1."

However, contrary to applicants, the rejection did not presume that the conveyance was only directly related on the compositional limitation of the toner. As discussed in the rejection, the Kohyama toner, not only meets the compositional limitations recited in instant claims 2-5, 23, 25, 28, 30, and 31, but also meets the other five parameters recited in instant claims 1 and 29, the (1) "coefficient of variation of shape factor," (2) the "ratio of rounded toner particle," (3) the "coefficient of variation of number particle diameter distribution," (4) the volume average particle size, and (5) the "arithmetic mean value of shape factor." As discussed in the rejection, the instant specification teaches that when the toner meets the parameters (1), (2), and (5) recited in instant claims 1 and 29, this facilitates the toner conveyance index to be regulated within the specific range. The specification also discloses that when the toner meets the parameter (3) recited in instant claims 1 and 29, the conveyance index can be controlled to be within the specific range. Furthermore, the instant specification at page 25, lines 1-9, discloses that "[t]o adjust the conveyance index of the toner of the present invention

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within a specified range, it is preferable that the colorant particle . . . is added to an external additive having a small particle diameter . . . and an external additive having a large particle diameter." As discussed in the rejection above, the Kohyama toner comprises hydrophobic silica having a number average particle diameter of 10 nm and hydrophobic titanium oxide having a number average particle diameter of 25 nm, which meet the small-sized external additive and the large-sized external additive recited in the instant claims 3-5, 23, 25, 30, and 31. Thus, based on the evidence on the present record, it is reasonable to presume that the Kohyama toner has a conveyance index as recited in the instant claims.

Moreover, the instant specification does not disclose that the conveyance index of the toner varies by adding the external additive according to a specific mixing technique at page 25, lines 1-12, as alleged by applicants. Rather, as discussed above, the instant specification at page 25, lines 1-9, discloses "[t]o adjust the conveyance index of the toner of the present invention within a specified range, it is preferable that the colorant particle . . . is added to an external additive having a small particle diameter . . . and an external additive having a large particle diameter." The specification at page 25, lines 9-12, further discloses that "[t]he external

additives are preferably added by multi-step mixing technique in which the small-sized external additive and the large-sized external additive are added in this order" (emphasis added). In other words, the instant specification does not limit how the external additives are mixed with the toner particles.

Furthermore, the showing in Table 3 is insufficient to show that the multi-step mixing of the external additives with the toner particles has a direct effect on the conveyance index of the toner, as alleged by applicants, because the showing in Table 3 is commensurate in scope with the instant claims. The toners in Table 3 comprise small-sized external inorganic particles having a number average particle size of 7 nm and preferred large-sized external additives having a number average particle diameter of 100 nm or 300 nm. See instant claims 26 and 32; and the instant specification at page 92, line 16, and page 93, line 12-18.

Instant claims 1 and 29 merely recite that a toner or developer comprising toner particles. They do not require an external additive. Nor do they require an external additive comprising more than one external additive having different particle sizes, let alone a small-sized external additive and a large-sized external additive having a number average particle size of 100 or 300 nm. Instant claim 5, which depends from instant claim 1, requires the present of a large-sized external additive having a

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number average particle size of 15 to 70 nm, which is much smaller than the number average particle sizes of 100 nm and 300 nm. Thus, based on applicants' limited showing in the instant specification and given the welter of unconstrained variables, it is not clear whether the toner conveyance indexes reported in Table 3 are dependent merely on the mixing order of the external additives with the toner particles, as alleged by applicants, or on the particular combination of the external additives, namely the number average particle diameter of the large-sized external additive, combined with the particular mixing order of the external additives.

In addition, the showing in Table 3 of the instant specification is not a probative comparison to Kohyama. The specification does not exemplify the Kohyama toner, which is obtained by mixing a hydrophobic silica having a number average particle diameter of 10 nm and hydrophobic titanium oxide having a number average particle diameter of 25 nm with toner particles in a HENSCHTEL MIXER. Kohyama, paragraph 0413. The Kohyama hydrophobic silica and hydrophobic titanium oxide meet the small-sized external additive and the large-sized external additive recited in the instant claims 3-5, 23, 25, 30, and 31. As discussed above, the toners in Table 3 comprise small-sized external inorganic particles having a number average particle

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size of 7 nm and preferred large-sized external additives having a number average particle diameter of 100 nm or 300 nm. Thus, applicants have not met their burden to show that the Kohyama toner has a conveyance index that is not within the scope of the instant claims.

Accordingly, for the reasons discussed above and in the rejection, claims 1-5, 21-23, 25, and 28-31 stand.

12. Claims 6, 24, 26, 27, and 32-34 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

As discussed in paragraph 11 above, Kohyama teaches that its toner particles are obtained by "a salting-out/fusion-adherence process" of resin particles and a colorant particle in a water-based medium that meets the product-by-process limitation recited in instant claims 6 and 34. However, Kohyama does not disclose the softening point of the resin particles used. Nor is there enough information on the present record for a person having ordinary skill in the art to reasonably presume that the resin particles disclosed in Kohyama have a softening point of 90 to 140°C as recited in instant claims 6 and 34.

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Kohyama does not disclose the external additives in its toner have a ratio of surface coverage of 40 to 100% of the toner as recited in instant claim 24. Nor is there enough information on the present record for a person having ordinary skill in the art to reasonably presume that the toner disclosed in Kohyama has the ratio of surface coverage recited in instant claim 24.

Kohyama does not exemplify a toner comprising a large-sized external additives having a number average primary particle size of 100 nm to 2,000 nm s recited in instant claims 26, 27, 32, and 33, and having a toner conveyance index as recited in instant claims 26, 27, 32, and 33.

13. This application contains claims 7-20 drawn to an invention nonelected with traverse in the reply filed on Feb. 22, 2005. A complete reply to the final rejection must include cancellation of nonelected claims or other appropriate action (37 CFR 1.144) See MPEP § 821.01.

14. Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicants are

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reminded of the extension of time policy as set forth in 37

CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Janis L. Dote whose telephone number is (571) 272-1382. The examiner can normally be reached Monday through Friday.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mr. Mark Huff, can be reached on (571) 272-1385. The central fax phone number is (703) 872-9306.

Any inquiry regarding papers not received regarding this communication or earlier communications should be directed to Supervisory Application Examiner Ms. Claudia Sullivan, whose telephone number is (571) 272-1052.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JLD

May 14, 2005


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1700